

Ontario Water Resources Commission

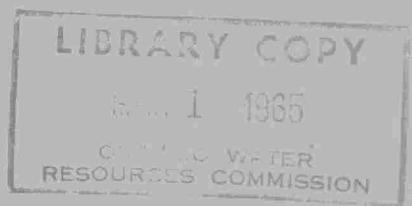
Report on

WATER POLLUTION SURVEY

Town of Orillia

County of Simcoe

1965.



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WATER POLLUTION SURVEY

TOWN OF ORILLIA

County of Simcoe

The Division of Sanitary Engineering

Ontario Water Resources Commission

January 1965

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PLAN OF ORILLIA

INTRODUCTION

The purpose of this survey was to assess the conditions in the vicinity of the Town of Orillia, with reference to the quality of the adjacent waters of Lake Couchiching and Lake Simcoe together with local inland watercourses.

Concern has been expressed to the Ontario Water Resources Commission (OWRC) by Orillia and district ratepayers at the possibility of pollution, particularly offshore from Kitchener Park and in the vicinity of Shingle Bay. The latter is also referred to as Shannon Bay. Complaints referring to the polluted condition of Mill Creek and concerning oil contamination of the waters of Lake Couchiching near the mouth of a local watercourse offshore from Lakeview Crescent have also been received by the OWRC.

Water pollution surveys of this type are performed routinely and upon request, and are designed to locate and record any existing sources of pollution. When sources of pollution are revealed, corrective action is requested.

In difficult situations, the laboratory and research services of the OWRC are available to assist in the determination of a satisfactory remedy. An industrial waste

survey in Orillia by the Ontario Water Resources Commission's Industrial Waste Branch was also made in 1964. The objectives of that survey were: (1) to determine the nature and quantity of industrial wastes discharging to the town's sewerage system and natural watercourses, (2) to determine whether the concentrations of these waste characteristics are within the recommended OWRC objectives for discharge to sanitary sewers, storm sewers and natural watercourses, and (3) to indicate, where necessary, the need for effective pre-treatment and control measures so that these recommended objectives would be satisfied. A separate report containing the results of this survey has been prepared by the Industrial Waste Branch and its contents would have to be taken into consideration in any pollution abatement programme, since it deals with individual industrial sources of pollution originating in Orillia.

GENERAL

The Town of Orillia is located at the intersection of Highways No.'s 11 and 12. It is situated at the north end of Lake Simcoe and south end of Lake Couchiching.

The assessed population of the municipality in 1963 was 14,686.

1. Water Supply

Orillia is supplied with water from Lake Couchiching and from two drilled wells. Normally, the well water is only used during the summer months.

Chemical treatment consists of the application of alum and Nuchar followed by sedimentation and pressure filtration. Chlorine is added ahead of the sedimentation for disinfection purposes.

2. Drainage

Drainage for the town is provided by Lake Couchiching, Lake Simcoe, Mill Creek and their tributaries. One of the main drainage channels is locally referred to as Ben's Ditch, which joins Mill Creek upstream from the Orillia water pollution control plant (WPCP).

3. Sewer System

The municipality has a separate system of sewers. With the exception of the outlying Victoria Point, Orchard Point, Couchiching Point and Heward Points areas, the remainder of the developed sections of the town has a separate system of sewers. Domestic sewage from the above mentioned points is mainly disposed of by private septic tank systems.

The proportion of Orillia served with storm sewers was estimated at less than 25 per cent. The storm water from the balance of the town is collected and transported in open ditches.

4. Refuse Disposal

Garbage and refuse collected in Orillia is disposed of at a sanitary landfill site which is located on marsh land west of West Street South. The site is bounded on the south by Lake Simcoe and on the west by Mill Creek.

A 100-foot setback is maintained between the material dumped and the edges of the lake and creek.

Drainage from the landfill site is naturally tributary to either Lake Simcoe or Mill Creek. There was no indication of seepage from the landfill area reaching either the lake or creek at the time of the examination.

SEWAGE TREATMENT FACILITIES

The sewage from Orillia entering the sanitary sewers is treated at an activated sludge water pollution control plant (WPCP). An extension to the plant, which included a bar screen and detritor, one primary and one final clarifier, was completed in 1963.

The treatment works are located along the east bank of Mill Creek west of West Street South. This plant also provides treatment for the wastes from the Ontario Hospital School located in the Township of Orillia.

For reference, brief details of the plant are presented as follows:

Design Capacity 4 mgd
Treatment screening,
grit removal, primary
sedimentation, aeration,
final sedimentation, sludge
digestion (2-stage), seasonal
chlorination.

Receiving Stream Mill Creek

Flow & Treatment Data

1964 - March-November *

Average 5-day BOD of raw sewage	ppm	223
Average 5-day BOD of final effluent	ppm	8.8
Average Suspended Solids of raw sewage	ppm	215
Average Suspended Solids of final effluent	ppm	8.5
Average BOD reduction	%	96.0
Average Suspended Solids removal	%	96.0
Average daily flow January-July 1964	gpd	2,170,000

* Based on 11 sets of composite samples collected by the operator.

The Orillia water pollution control plant has been producing an exceptionally good effluent as shown by the above mentioned data. The efficient treatment was also confirmed by the results of the samples collected during the survey.

The sludge lagoons are situated adjacent to Mill Creek creating the possibility of seepage or overflow into this watercourse. As a result of the present condition of the creek caused by discharges originating upstream from the water pollution control plant, it was not possible to assess what effects, if any, the close proximity of the lagoons had on the quality of the water in Mill Creek. Due to the close proximity of the lagoons to the stream, a close check on the possibility of seepage to the creek will be made during future inspections of the lagoons.

ANALYSES OF SAMPLES

The laboratory results of bacteriological examinations and sanitary chemical analyses of samples collected from Lake Couchiching, Lake Simcoe, Mill Creek and its tributary Ben's Ditch, from a number of storm sewer outlets, and a local watercourse which are tributary to Lake Couchiching, are presented in Tables 1-5 which are appended to this report. The examinations and analyses of the samples collected by the OWRC were performed at the Commission's laboratory in Toronto.

The results of the samples collected for bacteriological examination by the Simcoe County Health Unit from the above mentioned lakes and creek are also included.

A plan of Orillia showing the approximate locations of the sampling points and other pertinent information is included at the back of this report.

1. Significance of Laboratory Results

The OWRC objectives for surface waters in Ontario are as follows:

5-day Biochemical Oxygen Demand (BOD)
not greater than 4 ppm

Membrane Filter (MF) Coliform Count
not greater than 2400 coliforms per 100 ml

Phenolic Equivalents
Average - not greater than 2 ppb
Maximum - not greater than 5 ppb

pH Range 6.7-8.5

Some pertinent permissible limits of contaminants in storm sewer, sewage treatment plant, and industrial waste discharges are listed below. Adequate protection for surface waters, except in certain specific instances influenced by local conditions, should be afforded providing the following tolerance levels and pH range are observed:

5-day BOD not greater than 15 ppm
Suspended Solids not greater than 15 ppm
Ether Solubles (oil) not greater than 15 ppm
Phenolic Equivalents not greater than 20 ppb
pH Range 5.5-10.6

Comments

The results of the samples collected by the Health Unit staff indicated that the quality of the waters of Lake Couchiching and Lake Simcoe was generally satisfactory from a bacteriological standpoint. However, the samples collected from Mill Creek upstream from Highway No. 11B showed high coliform counts, presumably from agricultural drainage.

The samples collected by the OWRC from Lake Simcoe indicated that the water was in good condition but the samples collected from Lake Couchiching between points opposite Mississaga Street and Couchiching Park revealed coliform counts in excess of the Commission's objective of not more than 2,400 per 100 ml.

These results may have been adversely influenced by the rainfall that occurred prior to sampling on August 12, 1964, and in view of the storm sewer outlets of Orillia discharging to the lake in this vicinity. Although the dry weather flow from the storm sewers was estimated to be less than 1 gpm at the time of the sampling on August 26, 1964, the storm sewer discharges contained varying amounts of contaminating materials.

Mill Creek and its tributary Ben's Ditch were found to be in exceptionally poor condition physically, chemically and bacteriologically. The creek and ditch contained large deposits of a greyish-black and reddish-brown material. These unnatural accumulations are primarily caused by discharges originating from local industries. This was established by the results of the industrial waste survey referred to earlier in this report.

SUMMARY

The Town of Orillia is served by a modern water pollution control plant which produces a good effluent. Despite the provision of modern sewage disposal facilities, pollution problems exist within the municipality.

Mill Creek and its tributary Ben's Ditch can be considered as being grossly polluted by industrial wastes. The sources of these wastes are recorded in the industrial waste survey report.

A local watercourse which empties into Lake Couchiching in the vicinity of Lakeview Crescent is subjected to excessive industrial waste loadings which deteriorate the quality of the water in this stream. The origin of the industrial wastes is also accounted for in the industrial waste survey report.

On the basis of the analytical results of the "grab" samples, the quality of the water of Lake Simcoe adjacent to the shoreline of Orillia meets the Commission's water quality control objectives.

The samples collected by the OWRC revealed some bacterial contamination of Lake Couchiching offshore from the storm sewer outlets of Orillia. However, the lake water was of satisfactory quality north and south of the area where the storm sewer outlets terminate. It should be pointed out that Lake Couchiching was sampled after a heavy rainfall and therefore the effects would not necessarily be representative of normal dry weather conditions. In fact, the results of the samples collected by the Simcoe County Health Unit in the same area on July 12, 1964, were indicative of clean water conditions.

Although there is little dry weather flow from the Orillia storm sewers into Lake Couchiching, the coliform counts were high enough to suspect that some sanitary sewage may be entering the storm sewer system.

RECOMMENDATIONS

It is recommended that:

1. A concerted effort be made by the Town of Orillia and the industries involved to fulfil the recommendations contained in the Industrial Waste Survey report.
2. Mill Creek and its tributary Ben's Ditch be dredged to remove unnatural deposits and where necessary regraded.
3. The storm sewer system be checked for illegal connections and remedial measures taken to prevent the discharge of polluting wastes from the storm sewer outlets in excess of the permissible limits.

All of which is respectfully submitted,

District Engineer:


H. Browne

Approved by:


K.H. Sharpe, Director

Prepared by: P.J.Walsh

TABLE I-1

TOWN OF ORILLIA - LAKE COUCHICHING & LAKE SIMCOE

ALL ANALYSES EXCEPT PH REPORTED IN PPM
UNLESS OTHERWISE INDICATED.

SAMPLING POINT No.	LOCATION & DESCRIPTION	DATE	5-DAY	TOTAL SOLIDS	SUSPENDED SOLIDS	MF COLIFORM COUNT/100 ML
			BOD			
LCS-1	LAKE COUCHICHING OPPOSITE FITTON'S SIDE ROAD	AUG.12/64	0.8	182	5	40
LCS-2	LAKE COUCHICHING OPPOSITE COUCHICHING PARK	AUG.12/64	--	--	-	59,000
LCS-3	LAKE COUCHICHING OPPOSITE CANICE ST.	AUG.12/64	2.0	166	6	49,000
LCS-4	LAKE COUCHICHING OPPOSITE NEYWASH ST.	AUG.12/64	1.7	194	8	11,000
LCS-5	LAKE COUCHICHING OPPOSITE COLDWATER RD.	AUG.12/64	1.4	198	20	17,000
LCS-6	LAKE COUCHICHING OPPOSITE MISSISSAGA ST.	AUG.12/64	1.5	144	12	4,000
LCS-7	LAKE COUCHICHING OPPOSITE MOUTH OF LOCAL CREEK & ELGIN ST.E.	AUG.12/64	2.1	158	13	60
LCS-8	LAKE COUCHICHING AT THE NARROWS	AUG.12/64	--	--	--	20
LCS-9	LAKE SIMCOE AT VICTORIA POINT AREA	AUG.12/64	--	--	--	10

TABLE 1-2

<u>SAMPLING POINT NO.</u>	<u>LOCATION & DESCRIPTION</u>	<u>DATE</u>	<u>5-DAY BOD</u>	<u>TOTAL SOLIDS</u>	<u>SUSPENDED SOLIDS</u>	<u>MF COLIFORM COUNT/100 ML</u>
LCS-10	LAKE SIMCOE AT VICTORIA POINT AREA	AUG.12/64	--	--	--	50
LCS-11	LAKE SIMCOE AT TIP OF VICTORIA POINT	AUG.12/64	--	--	--	150
LCS-12	LAKE SIMCOE AT SHANNON BAY (ALSO KNOWN AS SHINGLE BAY)	AUG.12/64	--	--	--	50
LCS-13	LAKE SIMCOE AT SHANNON BAY	AUG.12/64	--	--	--	800
LCS-14	LAKE SIMCOE OPPOSITE HIGH ST.	AUG.12/64	--	--	--	18
LCS-15	LAKE SIMCOE OPPOSITE KITCHENER PK.	AUG.12/64	--	--	--	600
LCS-16	LAKE SIMCOE EAST OF MOUTH OF MILL CREEK	AUG.12/64	--	--	--	80
LCS-17	LAKE SIMCOE AT MOUTH OF MILL CREEK	AUG.12/64	2.3	508	20	500
LCS-18	LAKE SIMCOE WEST OF MOUTH OF MILL CREEK	AUG.12/64	--	--	--	90

TABLE 2-1 • TOWN OF ORILLIA - MILL CREEK & TRIBUTARY - STREAM SAMPLE RESULTS

ALL ANALYSES EXCEPT PH REPORTED IN
PPM UNLESS OTHERWISE INDICATED

SAMPLING POINT No.	LOCATION & DESCRIPTION	DATE	5-DAY BOD	TOTAL SOLIDS	SUSPENDED SOLIDS	MF COLIFORM COUNT/100ML	PHENOLS PPB	ETHER SOLUBLES
M-0.0	MILL CREEK AT OUTLET TO LAKE COUCHICHING	AUG. 12/64	2.3	508	20	500	--	--
M-0.30	MILL CREEK APPROXIMATELY 100 FT. DOWNSTREAM FROM ORILLIA WATER POLLUTION CONTROL PLANT (WPCP) SEWER OUTFALL	AUG. 12/64	0.3	614	8	0		
M-0.32	ORILLIA WPCP SEWER OUTFALL	AUG. 12/64	0.6	606	8		15	--
M-0.34	MILL CREEK APPROXIMATELY 100 FT. UPSTREAM FROM ORILLIA WPCP SEWER OUTFALL	AUG. 12/64	480	61,136	60,720	2,900,000		
MBDT-1.1	BEN'S DITCH TRIBUTARY DOWNSTREAM FROM JAMES ST. W. LIFT STN.	AUG. 12/64	4.0	276	108	70,000	0	4
MBD-1.33	BEN'S DITCH DOWNSTREAM FROM FAHRALLOY CANADA LTD.	AUG. 12/64	0.6	380	6	8,000	0	0
M- .95	MILL CREEK AT HWY. NO. 118 UPSTREAM FROM JCT. WITH BEN'S DITCH	AUG. 12/64	0.7	320	6	12,000	--	--

TABLE 3

TOWN OF ORILLIA - LAKE COUCHICHING - OUTFALL SURVEY RESULTS

ALL ANALYSES EXCEPT PH REPORTED
IN PPM UNLESS OTHERWISE INDICATED

<u>SAMPLING POINT NO.</u>	<u>LOCATION & DESCRIPTION</u>	<u>DATE</u>	<u>5-DAY BOD</u>	<u>TOTAL SOLIDS</u>	<u>SUSPENDED SOLIDS</u>	<u>MF COLIFORM COUNT/100ML</u>	<u>PHENOLS PPB</u>	<u>ETHER SOLUBLES</u>
0-1	STORM SEWER - MISSISSAGA ST.	AUG.26/64	5.4	210	10	96,000	5	
0-2 W	STORM SEWER - COLDWATER ST.	AUG.26/64	6.6	782	28	112,000	8	
0-3 W	STORM SEWER - NEYWASH ST.	AUG.26/64	24	484	44	17,000,000	10	
0-4 W	STORM SEWER - CANICE ST.	AUG.26/64	2.4	250	2	7,500	50	

TABLE 4

LAKE COUCHICHING - STREAM SAMPLE RESULTS

LCT-0.02

LOCAL WATERCOURSE
NEAR OUTLET TO
LAKE COUCHICHING

AUG.12/64 3.4 316 8 8,400 - 5

Table 5 - Samples Collected by Simcoe County Health Unit

The results of bacteriological examinations of samples collected by the Simcoe County Health Unit from Lake Couchiching and Lake Simcoe offshore from Orillia are recorded below.

The samples designated as sampling point numbers 1-32 inclusive represent samples collected from Lake Couchiching between a point opposite the northern town limits of Orillia and Couchiching Point.

<u>Sampling Point No.</u>	<u>Date Collected</u>	<u>Total Coli-form Organisms</u>	<u>E.coli</u>
1	July 12/64	9	0
2	July 12/64	23	0
3	" "	93	4
4	" "	4	0
5	" "	43	0
6	" "	0	0
7	" "	0	0
8	" "	0	0
9	" "	23	4
10	" "	0	0
11	" "	0	0
12	" "	0	0
13	" "	0	0
14	" "	0	0
15	" "	43	0
15-2	" "	23	0
16	" "	930	0
17	" "	43	43
18	" "	9	0
19	" "	43	23
20	" "	2300	430
21	" "	430	230
22	" "	230	9
23	" "	150	0
24	" "	0	0
25	" "	0	0
26	" "	7	4
27	" "	430	4
28	" "	9	9
29	" "	0	0
30	" "	2300	230
31	" "	43	9
32	" "	43	0

Table 5 (con't)

The samples designated as sampling point numbers 3A-15A represent samples collected from Lake Simcoe between Victoria Point and a location opposite the south-westerly town limits near the mouth of Mill Creek.

<u>Sampling Point No.</u>	<u>Date Collected</u>	<u>Total Coli-form Organisms</u>	<u>E.coli</u>
3A	July 6/64	0	0
4A	" "	23	23
5A	" "	23	23
6A	" "	9	0
7A	" "	75	43
8A	" "	9	0
9A	" "	9	0
10A	" "	23	23
11A	" "	23	0
12A	" "	93	23
13A	" "	39	0
14A	" "	430	230
15A	" "	430	23

The samples designated as sampling point 16B-20B represent samples collected from Mill Creek between its mouth and Ridge Road.

16B	July 6/64	210	210
17B	" "	43	43
18B	" "	93	23
19B	" "	450,000	--
20B	" "	450,000	--

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